Theme 2: A Unity of Purpose: Environmental Ethics

Presentation: Need Science and Wisdom Be Separate?
Presenter: Rupert Sheldrake

From the very beginning of modern science in the seventeenth Century, science was seen as a means of acquiring knowledge and power over nature, and its separation from ethics and from wisdom was explicit. One of the prophets of modern science was Sir Francis Bacon, an English politician and lawyer. He realized that for science to develop as he hoped it would, with a kind of secular priesthood in control, it had to be set up in such a way that it did not get into too much trouble with established religion. He therefore separated the realms of science and religion. To justify doing so he used the text of the Book of Genesis (2:19-20), where God brought the animals to Adam and asked Adam to name them. This naming of the animals Bacon took to be the prototype of science. This occurred before the creation of Eve and before the Fall through the eating of the Tree of Knowledge of Good and Evil. Bacon argued that science represented pure, uncontaminated, innocent knowledge, prior to ethical questions and to the Fall. Scientists participated in a pursuit of knowledge and power that was morally innocent. Scientists have persisted in that belief ever since. It means when things go wrong - when scientists invent things that cause appalling pollution, or hydrogen bombs that kill people - then they are not to blame. The fault lies with politicians, corporations or others. Scientists themselves are just involved in the innocent pursuit of truth.

This ideology has also spilled over into technology where you can invent what you like and market it, leaving someone else to deal with the consequences later. It is not the responsibility of the scientists or the technologists to deal with the problems that these discoveries or inventions give rise to. This is of course very convenient for scientists and it means that in a scientific education, until very recently, there was no discussion whatever of ethics or the wider purpose of science. In the whole of my education at Cambridge I don¹t think these things were discussed even for a minute.

Also in the seventeenth century a number of dualities were established which have affected science right up until the present. A brief look at the history of science helps us see the situation today in context. Although these ideas are old ideas, they still inform the way people think about the nature of science.

The first split was between God and nature. Nature was seen as a vast mechanical system, entirely autonomous, preceding automatically in accordance with God-given laws, started off by God in the first place but then proceeding spontaneously without any need for divine intervention, except perhaps for the occasional suspension of laws of nature so that miracles could happen. Thus God was detached from mechanical nature.

Second was the duality between matter and spirit, made clearest by Descartes. Matter constituted the whole of nature; spirit involved the human intellect, the angels and God. The only part of the material world in which spirit played an ongoing role was through interacting with a small region of the human brain, the pineal gland. The modern theory is essentially the same except the supposed seat of the spirit has shifted

a couple of inches into the cerebral cortex. But this idea of confining the realm of spirit to a small region of the human brain, leaving everything else in the physical universe as entirely material, unconscious and mechanical, became the foundation for mechanistic science and is still the dominant orthodoxy.

Third, there was the split between the knower and the known. The scientist was supposed to know nature as if he were disembodied mind outside the natural world, knowing obnly through objective quantities and mathematical laws, separated from qualities, subjective sensations and other aspects of embodied existence. This split is still reflected in the style of science writing that is still cultivated in many schools. Through the use of the passive voice, the actual scientist, as a person, is mysteriously absent: "A test-tube was taken", not "I took a test-tube." The pretence is that science somehow unfolds spontaneously through impersonal laws of nature in front of a dispassionate observer.

Finally, there was the split between science and religion. Especially in the Protestant world, this split was very convenient. It meant these two realms could usually avoid conflict. The deal was that science got the physical universe, the heavens and the earth, all biological life, and the entire human body. Religion got ethics, faith and the human spirit. The sky ceased to be the abode of God and the celestial angels, it simply became inanimate matter in motion. God was no longer an effective living presence in nature. The universe proceeded automatically without any need for God. In fact, from the point of view of mechanistic science, God soon became an optional extra, whom many scientists found they could do without. In fact, God and faith became reduced to activities in a small region of the human brain with no other influence in nature except through human beings. And since no-one could say what these activities in the brain were, or exactly how they interacted with the nervous system, it was a short step to materialistic atheism of the kind that is so common today. The mind is nothing but the activity of the brain, and in so far as people have religious faith or an idea of God, these are mere processes inside human nervous systems. They may give comfort to those who believe them but have no objective external validity. This is the familiar world view, the standard world view of modern rationalists and intellectuals. This is the view that most people of as "scientific." In fact it is a materialist ideology that has become identified with science, but is very different from science as a method of empirical investigation.

There are other, more hopeful aspects of science, more conducive to a new dialogue between science and religion. One began quite early in the history of science, through the insight of Sir Isaac Newton, who was himself influenced by theology and by alchemical ideas. Although Newton is often seen as the precursor of the fragmented scientific view, one central aspect of his thought gave a thoroughly holistic view of nature. His theory of gravitation said that everything in the universe was interconnected. All matter was inter-related with all other matter. Everything was interconnected. He described this interconnection mathematically, but he could not explain how it occurred; indeed, he believed it happened through the agency of God. He saw space as the "sensorium," the sense organ of God, the medium of divine omniscience. Newton¹s theology is interesting even today, but was rapidly forgotten as the more materialistic side of his science became predominant.

Much more recently, since the 1960s, the Big Bang theory has given us the idea of the

entire Universe coming from a common origin. According to the creation myth of modern cosmology, the universe began extremely small and extremely hot, less than the size of the head of a pin, and it has been growing, cooling and evolving ever since. It is nothing like the eternal world-machine of nineteenth century physics, slowly running out of steam according to the second law of thermodynamics. It is more like a developing organism.

The theory of evolution, first put forward by Charles Darwin and Alfred Russel Wallace in 1858, tells us that all life is interconnected. Modern molecular biology seems to confirm that all living organisms have come from a common source. They have the same kinds of proteins, DNA, amino-acids and so on. We are related to all other living creatures. We are not separate and detached from nature but part of it.

The idea that the observer is separate was first questioned within science through quantum physics, where the observer and observed are seen as inextricably interconnected. Moreover, sociologists of science have pointed out what is in fact pretty obvious, namely that scientists are not totally detached, dispassionate intellects, looking at nature as if through plate glass. They are motivated by personal ambitions and rivalries. Science itself is influenced by social, political and economic factors; it is dependent on patronage and funding; it is also strongly affected by intellectual fashions. So science is now seen as more participatory with nature and more embedded in the whole human economic and political system.

The Gaia hypothesis enables us to see Earth as a living organism where everything is interrelated through the oceans and the atmosphere. Global warming, the ozone hole, the effects of human activity on the physiology of the entire planet are now known to practically everybody. This is another example of the recognition of interconnectedness that is coming about through science itself. Of course, the idea that Gaia, the Earth, is a living organism is an ancient idea present in many mythologies. But it has been rediscovered and given new, detailed formulations within modern science. And through the science of ecology, we are coming to a fuller recognition of the interactions of living organisms with their environment and with each other, and indeed with human activities, as we have been hearing as we have sailed through the Adriatic.

Since the 1920s a new philosophy of nature has been developing as an alternative to mechanism and reductionism, the holistic or organismic view. The predominant metaphor is not the machine, but the organism. Nature can be seen as a nested hierarchy of levels of organisation. Reductionism is the belief everything can be reduced to an ultimate level of tiny particles, subatomic particles, or quarks, or whatever. The holistic view is that at every level of nature the whole is made up of parts which are themselves wholes: for example sub-atomic particle, in atomic nuclei, in atoms, in molecules, in crystals. Or organelles, in cells, in tissues, in organs, in organisms, in societies, in ecosystems. At every level of organisation the whole is more than the sum of the parts and if you attempt to explain it just by breaking it up into parts then the very quality that makes it a whole will disappear. If you demolish a building you can analyse the building blocks it is made of, and find out what chemicals are in them, but the architectural plan, the form and structure will disappear as the building is demolished.

Science is still radically incomplete and there are a great many unsolved and outstanding problems. Most of them are precisely to do with what makes things wholes. How do ecosystems or societies or organisms function as wholes? One of the central problems of biology is development. How do organisms develop from fertilised eggs into creatures like ourselves, or trees, or fish? As they develop, more structure and form come from less. The reductionist approach is to try and explain it all in terms of genes and of course you can find a huge amount about genes and how they¹re activated. But it doesn¹t add up to understanding how the whole organism works. In fact it leads to an increasing fragmentation of research, pursuing ever greater detail. A more integrative science would be less fragmented.

The greatest problem of all facing science is the understanding of the human mind itself. Practically all research within institutional science is based on the assumption that the mind is nothing but the activity of the brain. Therefore the study of the human mind is seen as a matter of understanding nervous activity better, or modelling the brain in terms of neural networks, or other computer models. The idea that the mind might be more extensive than the brain is a taboo area within science, because of the limits imposed by the materialist model. As soon as you allow yourself to break out of the materialist view of the mind, you see there are many processes that don¹t fit into it and that it doesn¹t explain. One of them is perception itself.

When you this page in front of you, according to the standard view, light comes into your eye, forming an inverted image on the retina; nerve impulses move up the optic nerve, patterns of chemical and electrical activity occur within the brain. Then an image of the page appears somewhere inside your head; and for some totally unexplained reason you subjectively experience it. Consciousness has no role in this kind of science, it¹s a kind of add-on extra which most scientists would prefer to ignore. But since they are themselves conscious beings and have to be conscious to do science, you can¹t really ignore it. But it doesn¹t fit in at all.

Then, even more mysterious, you experience your image of the page as being located where it actually is. Perhaps we should take our experience seriously. This is an idea that is so simple it is hard to grasp. What I am suggesting is your image of the page may actually be where it seems to be, not inside your brain, but about 40 cm in front of your eyes. Your mind may stretch out far beyond your brain. Images may be projected to exactly where we see them. If they¹re not, they¹re illusions or hallucinations and if we had too many of those we wouldn¹t survive long because we¹d bump into things, crash cars and so forth. I think perception involves a two-way process: an inward movement of light, and an outward projection of images through what I would call mental fields. In fact I¹d suggest that the mind is not simply located inside the head. Like all holistic systems, it involves fields of organisation which extend beyond the material limits of the body. We¹re familiar with the idea of extended fields from magnets, for example. A magnet is more than the material structure of the iron bar. The fields of the magnet reach out beyond it and affect things in its vicinity. Another example is a mobile phone, which depends on more than just the material structure of the object you hold in your hand. Its functioning depends on invisible fields that connect it with transmitters and receivers and enable information to come into and out of it. But you don¹t see this, and if you didn¹t know about electromagnetic fields and thought you could understand it by analysing the chemicals in it, you¹d soon come up with a huge amount of chemical detail but you¹d achieve no

understanding of how it works.

In a similar way, I suggest our minds, like many other natural processes, involve fields of a kind not yet recognised within standard physics. I¹ll just give one final example. Many people have experienced psychical phenomena such as telepathy. Many animals appear to be telepathic, many dogs and cats pick up their owners¹ intentions. But the commonest type of telepathy in the modern world occurs with telephones. It has evolved along with technology. I¹ve done surveys which show the majority of the population have had the experience of thinking of someone for no apparent reason, then that person rings. Or sometimes when the phone starts ringing people somehow know who it is. Of course if you expect someone to call at a particular time, no-one is very impressed by that. It¹s when you don¹t expect it that it seems interesting and many people think of it as telepathic.

What does science have to tell us about this? The answer is nothing, because this has been a taboo area beyond the bounds of materialistic brain research. For the last two years I¹ve been doing experiments on telephone telepathy to find out whether this common experience is in fact true. This is an example of where science, using scientific methods, can investigate areas at present uninvestigated. The difference between science as an empirical method and science as a materialist ideology becomes particularly clear.

In these experiments which I can outline very briefly, a person names four potential callers. Usually they are people the person knows well. We film people sitting at home in front of the telephone for 15 minutes. Nothing¹s happening, they sitting there under observation on time-coded videotape. After they are on film, we pick one of the four people at random by throwing a die and then phone to ask them to call their friend at a fixed time. The person knows that he or she will get a phone call at that time, and when the phone rings has to guess which one of these four people is calling. Guessing at random, people would be right on average 25% of the time; there is a one in four chance of getting it right by chance. We¹ve now completed more than 800 of these trials and the average success rate is 42%. People are not right every time but the success rate is far more than you would expect on the basis of chance. These experiments work just as well when we have people calling from Australia or New Zealand as they do from people in the next street. Physical distance doesn¹t matter; what matters is emotional closeness.

In some experiments, two of the four callers were close friends or family members, and the other two were strangers. With the strangers, the success rate was at the chance level. But with friends and family members it was very far above it, again in accordance with the idea that telepathy occurs with people who are emotionally close, with friends and family members, rather than with strangers. .

The same thing happens with e-mails. In the last two months we¹ve done quite an extensive series of experiments with those which give essentially the same results.

This is of course a highly controversial area of research and I mention it because it illustrates how much we can find out by the experimental method, how much we can discover about interconnectedness, if we go beyond the dogmatic materialism that has shackled science for so long.

All these new kinds of science that I¹ve talked about and even the old kind, starting with Newton¹s theory of gravitation, point to a science that shows interconnectedness between people and nature, between people and each other, between aspects of nature with other aspects of nature. This interconnectedness enables us to see things in a broader context, and surely wisdom involves seeing things in a larger context. This is an area where science can actually contribute to wisdom, and lead to new insights. The old traditions of wisdom didn¹t have all the knowledge that we have through science. Its integration into new structures of understanding is one of the great challenges that faces us all.

A science of interconnectedness could have beneficial effects for our understanding of the environmental crisis. But it is precisely the environmental crisis, largely caused by science and technology, that is forcing science and technology to change. Many scientists would have gone on unperturbed if it hadn¹t been for this crisis. These new problems, acting back on science, are compelling us to search for a new kind of wisdom, and call into question the ideology on which science has been based for so long. Unfortunately, these changes have not yet reached the educational system which still reflects the nineteenth-century materialist world view.

But things are changing fast. Science is not fixed, it is continually evolving under the influence of social, economic and political forces, and through scientific discoveries themselves. These changes are already making possible new dialogues and discussions, and are helping to lessen the traditional separation between science and wisdom.